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OCR A Level Computer Science

H446 – Paper 1



HTML and CSS

Unit 5
Networks and web
technologies



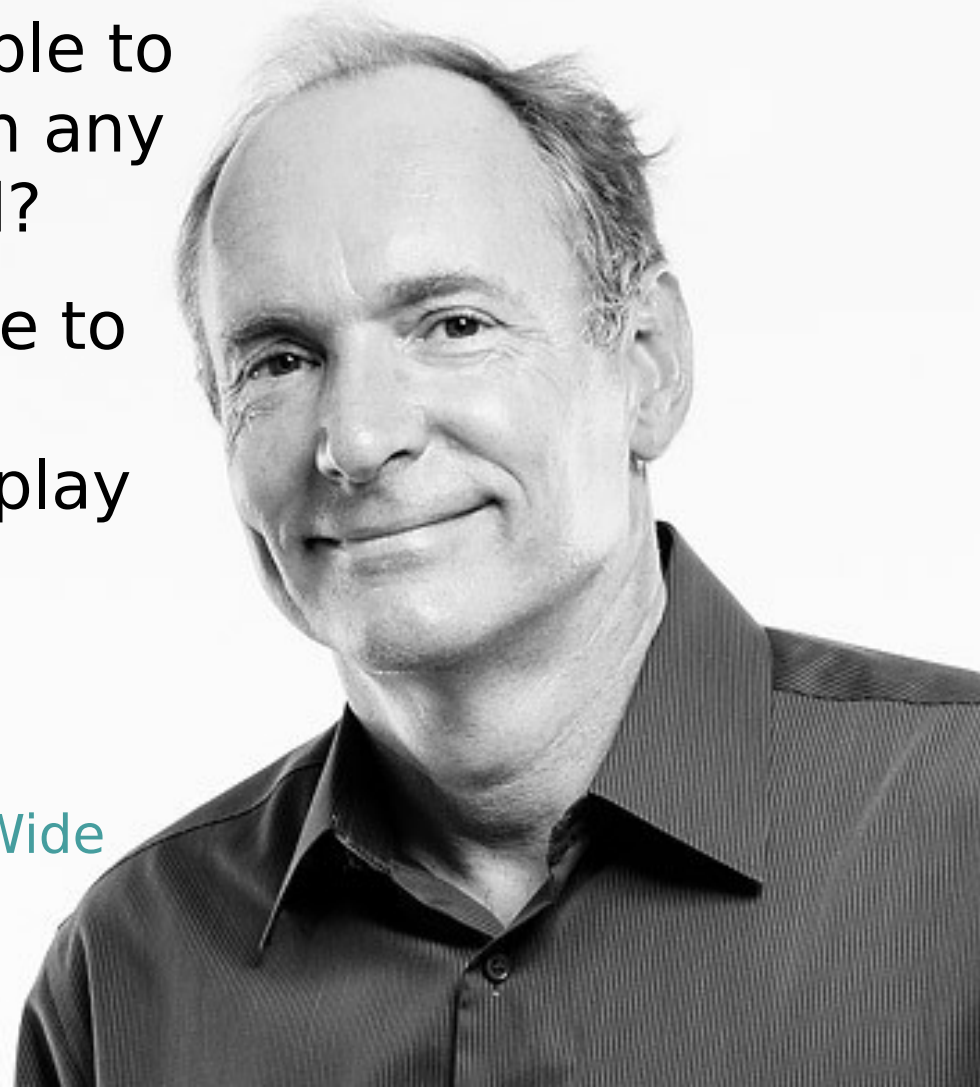
PG ONLINE

Objectives

- To understand HTML and the role of HTML on the World Wide Web
- To understand CSS and the role of CSS in Web Pages
- To be familiar with various HTML and CSS tags and their functions
- To use inline CSS directly within HTML files using the `<style>` tag, and with external style sheets

The World Wide Web

- How are web pages able to display as intended on any computer in the world?
- What rules are in place to govern browser interpretation and display of web pages?
 - Who created it all?
 - How did he unify the language of the World Wide Web?



HTML

- **Hyper Text Mark-up Language**
- The language of the World Wide Web
- HTML describes the content of Web Pages



Web Pages

- You can view the HTML of any web page by pressing **Ctrl+U**, or using **View > Source**
- The first few lines of HTML code behind a web page specify the page title and a description of the content

```
1 <html>
2 <head>
3     <title>La Tour Eiffel</title>
4     <link href="styles.css" rel="stylesheet" type="text/css">
5 </head>
6
7 <body>
8     <div id="page"><!--Opening page-->
9         <div id="header">
10             <h1>La Tour Eiffel</h1>
```



HTML code

- Resides in a text file containing the content of the website to be displayed by the browser
 - HTML uses `<tags>` to govern how to present sections of content
 - It stores the locations of images that are to be displayed
 - It also provides the locations of other websites (and bookmarks within webpages) that are linked to using hyperlinks



Content vs style

- HTML is used to define the page content and structure
- CSS (Cascade Style Sheets) are used to define page styles and appearance



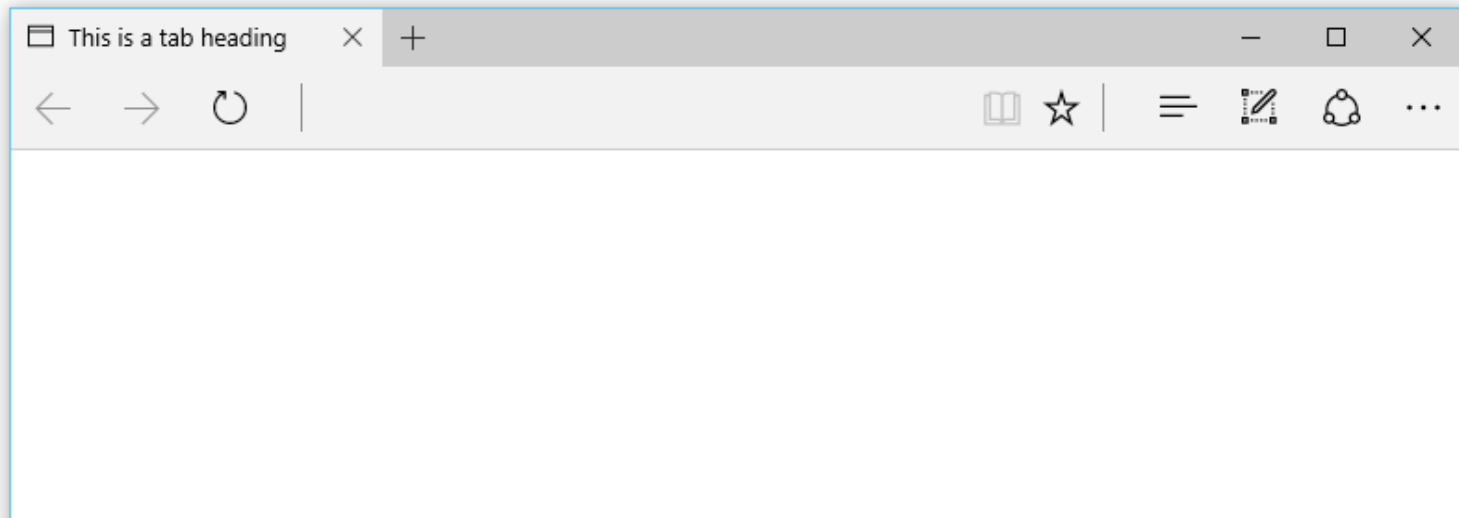
HTML vs CSS

- Without and with CSS – Which is which?



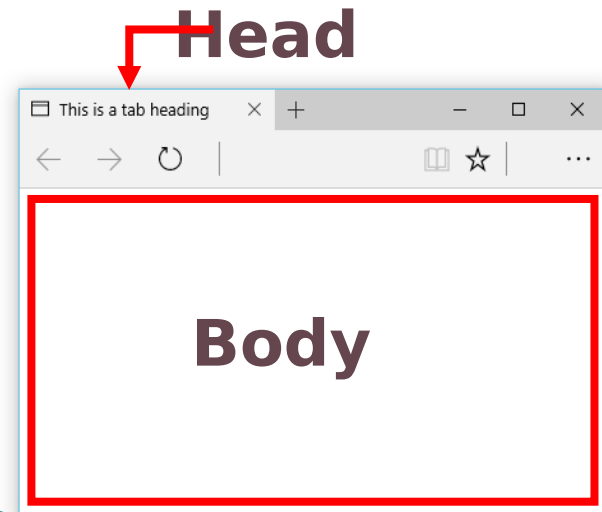
<Opening> and </Closing> tags

- Most HTML tags include an opening and closing tag
- These denote when to start applying a rule and when to stop
- For example:



Parts of a web page

- Web pages are made up of a Head and Body
 - The head contains the page metadata
 - The body contains the page content
 - In the example below, what do you think the code in line 3 does?



```
1 <html>
2 <head>
3 <title>La Tour Eiffel</title>
4 <link href="CSS External.css" rel="stylesheet" type="text/css">
5 </head>
```



Editing HTML Code

- Copy the **Eiffel Tower.html** file to your own file area
- Open **Eiffel Tower.html** in a web browser
- Open the same file with Notepad or Dreamweaver
- Make a change to the source code and Save, e.g.
 - Title or body text
 - Width or height of the picture
- View the change by refreshing the web browser (**F5**)



Paragraph tags `<p></p>`

- Paragraph tags help to define new blocks of content
- `<p>` tags create a new line for new content within them and leave a small gap between paragraphs
 - The `<p>` block can also be styled using CSS at a later point
 - Add `<p> </p>` tags around the hyperlink and indent your script
 - Save and refresh the page

`<p>`

`<a`



Worksheet 4

- Complete **Activity 1** on the worksheet
- Use the quick reference guide for HTML syntax



Ordered lists

- A numbered list can be created using the tags

- Each tag creates a block which requires an additional

 list item tag for each line in the list

```
<h2>The construction schedule</h2>
```

```
<ol>
```

```
<li>The first floor was completed on the 1st April 1888</li>
```

```
<li>The second floor was completed on the 14th August 1888</li>
```

```
<li>The top section was completed on the 31st March 1889</li>
```

```
</ol>
```

The construction schedule

1. The first floor was completed on the 1st April 1888
2. The second floor was completed on the 14th August 1888
3. The top section was completed on the 31st March 1889



Unordered lists

- A bulleted list can be created using the tags

```
<h2>Facts and figures</h2>
<ul>
  <li>The tower has 1665 steps</li>
  <li>2.5 million rivets were used</li>
  <li>7,300 tonnes of iron</li>
  <li>60 tonnes of paint</li>
</ul>
```

Facts and figures

- The tower has 1665 steps
- 2.5 million rivets were used
- 7,300 tonnes of iron
- 60 tonnes of paint



Lists and bullets

- Complete **Activity 2**



CSS

- Cascading Style Sheets (CSS) defines the style, layout and general 'feel' of web pages
- CSS can be used to change:
 - the style of an entire website
 - a single web page
 - a section of a webpage define by a <div> tag or
 - a single occurrence of an element, for example:

```
<h2 style="text-align:center">
```



CSS syntax

**HTML
Selector**

Declaration

```
h1 { color: red; }
```

Property

Value




Applying CSS styles

- Styles can be applied to HTML content in three ways:
 - Inline styling to apply a unique style within an HTML element
 - Internal, embedded styles defined within `<style>` tags in the `<head>` section of a single HTML file
 - Using an external style sheet and linking to it from any HTML files that may be created for an entire website
- Which method provides the greatest scope for consistency across multiple webpages?



Embedded CSS

- Define the style at the top between the `<style>` tags



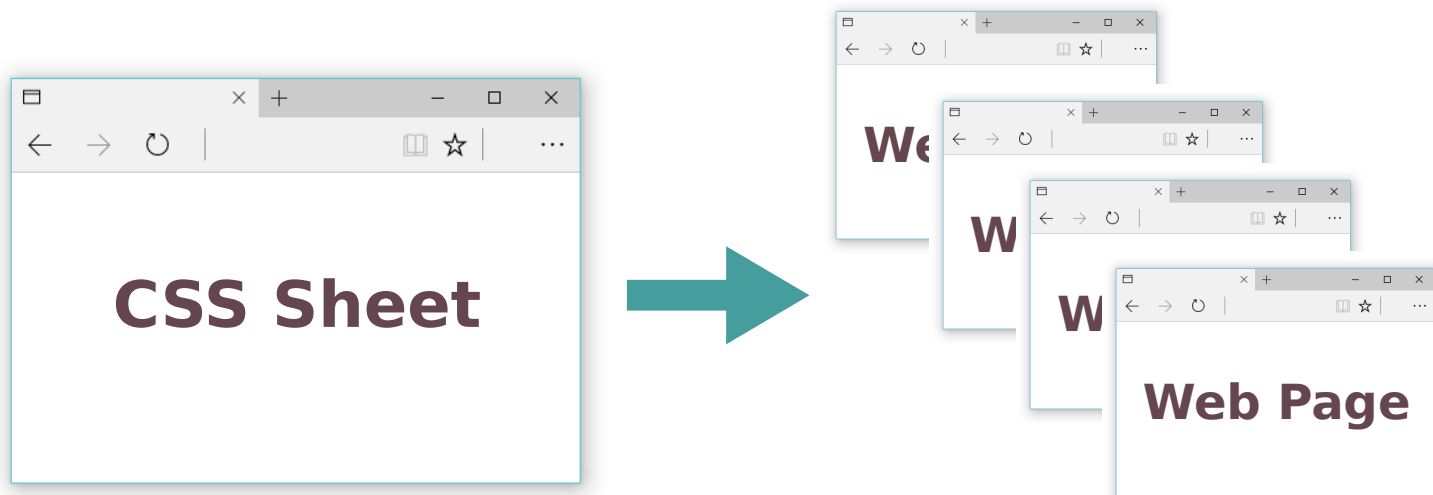
```
<head>  
  <style>  
    h1 {text-align:center}  
  </style>  
</head>  
  
<body>  
  <h1>  
    La Tour Eiffel  
  </h1>
```

- Everything that falls inside that tag or selector in the html body adopts that style



Using external CSS files

- External CSS files enable you to apply styles on a single CSS stylesheet to multiple HTML files throughout an entire website
 - This also removes the CSS from the HTML pages making them easier to read



Linking to an external CSS file

- Linked to an external CSS file will apply the same styles to any HTML files that link to it
 - The `<link>` tag sits in `<head>` section of the HTML file
 - The `rel` attribute defines the relationship. In this instance, the linked file is a stylesheet

```
<html>
<head>
<title>La Tour Eiffel</title>
  <link href="styles.css" rel="stylesheet"
type="text/css">
</head>
```



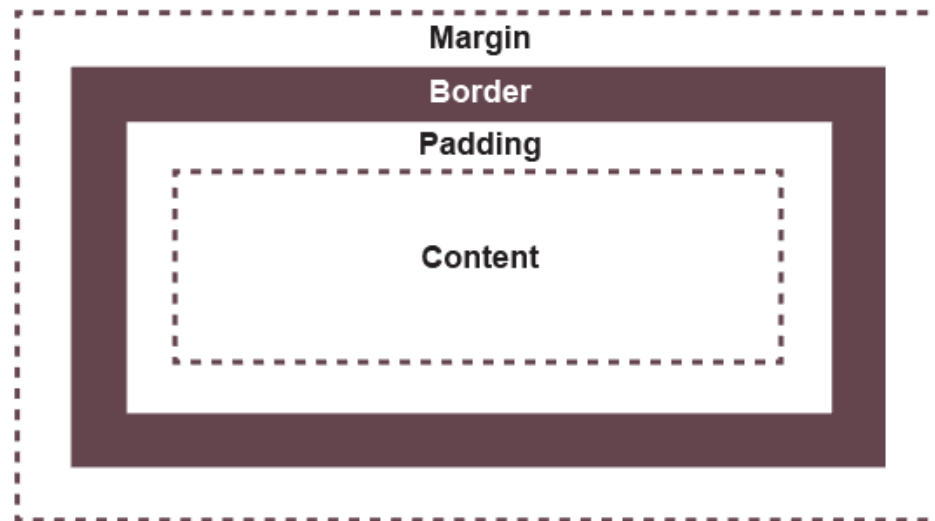
Common CSS properties

- What do the following properties and attributes do?
 - `background-color: white;`
 - `font-family: Arial, Helvetica, "sans-serif";`
 - `font-size: 18px;`
 - `text-align: center;`
 - `margin: 0px;`
 - `padding: 0px;`
- What do the `font-family` attributes mean?
- Why is `font-size` measured in px rather than pt?



Border properties

- The box model sets all HTML elements into a box, even if this is invisible
 - You can define the color, border style and width
 - An invisible border has a default width of 0px, style: none



Colour definitions

- You can define colours by name or by using hex codes

```
h1 {color: red;}
```

```
h1 {color: #FF0000;}
```



Understanding hex colour codes

- Hex colour codes are split into three RGB channels, each with values ranging between 00 and FF?

#REDGREENBLUE

#11AAFF

- What colour would be represented by #00FF00?
- What might the hex code be for a deep purple?



Hex colour codes

- Hex codes allow us to be more specific when assigning colours to elements
 - Rather than stating 'red', we can apply a very specific shade of any colour

d70000	d75f00	d78700	d7af00	d7d700	d7ff00	ffff00	ffd700	ffaf00	ff8700	ff5f00	ff0000
160	166	172	178	184	190	226	220	214	208	202	196
d7005f	d75f5f	d7875f	d7af5f	d7d75f	d7ff5f	ffff5f	ffd75f	ffaf5f	ff875f	ff5f5f	ff005f
161	167	173	179	185	191	227	221	215	209	203	197
d70087	d75f87	d78787	d7af87	d7d787	d7ff87	ffff87	ffd787	ffaf87	ff8787	ff5f87	ff0087
162	168	174	180	186	192	228	222	216	210	204	198
d700af	d75faf	d787af	d7afaf	d7d7af	d7ffaf	ffffaf	ffd7af	ffafaf	ff87af	ff5faf	ff00af
163	169	175	181	187	193	229	223	217	211	205	199
d700d7	d75fd7	d787d7	d7afd7	d7d7d7	d7ffd7	ffffd7	ffd7d7	ffafd7	ff87d7	ff5fd7	ff00d7
164	170	176	182	188	194	230	224	218	212	206	200
d700ff	d75fff	d787ff	d7afff	d7d7ff	d7ffff	ffffff	ffd7ff	ffaaff	ff87ff	ff5fff	ff00ff
165	171	177	183	189	195	231	225	219	213	207	201



Applying CSS styles to HTML content

- CSS style attributes are linked to HTML selectors
 - Styles applied to the body of a web page will be attributed to the html body element in curly brackets:

body

{

```
margin: 0px;  
padding: 0px;  
background-color:white;  
font-family: Arial, Helvetica, "sans-  
serif";  
font-size: 18px;  
text-align: center;
```



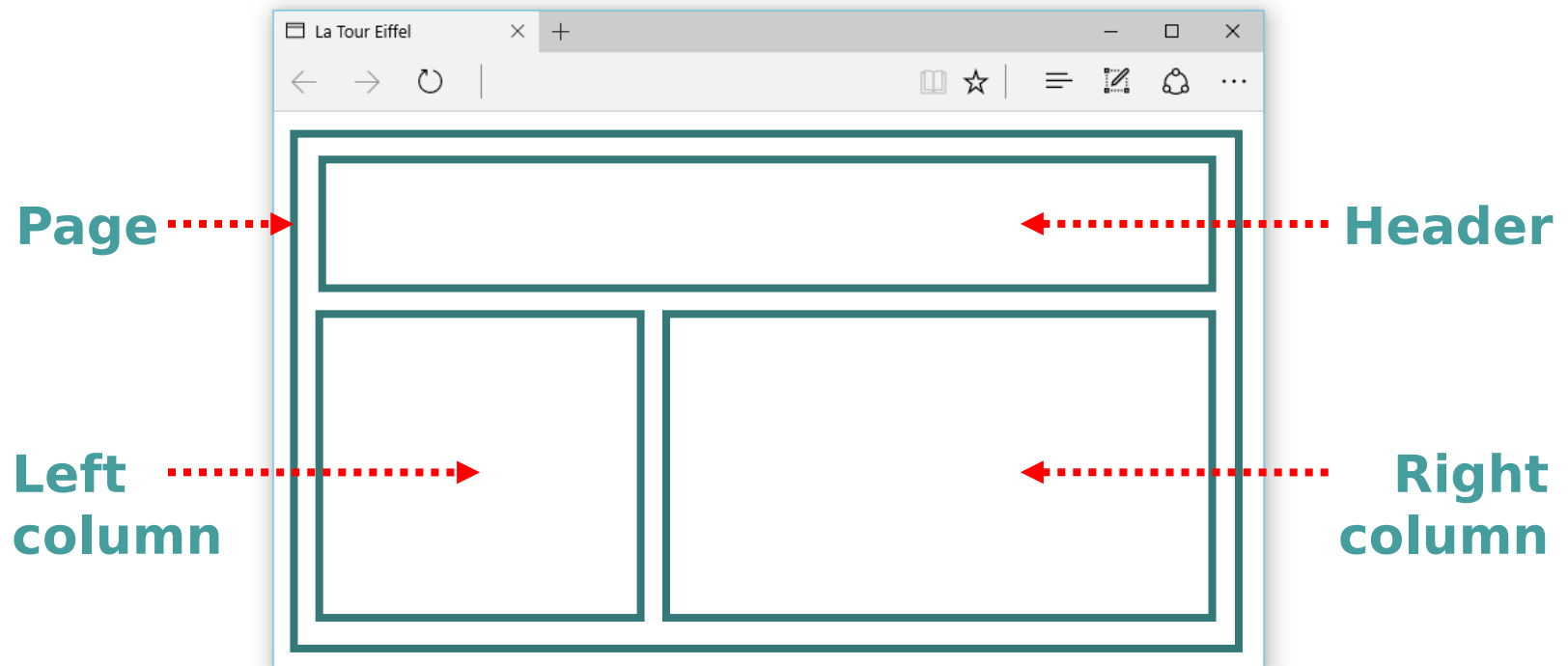
Worksheet 4

- Complete **Activity 3** to create a new CSS sheet



HTML Divisions

- `<div>` tags create tidy blocks of HTML content that can be formatted collectively and independently using CSS



Creating a `<div>` block

- Creating a `<div>` block for the entire webpage provides a method of formatting everything behind the content
 - On its own, it does nothing but group HTML

```
<body>
  <div> <!--Opening page div-->
    <h1>La Tour Eiffel</h1>
    <h2>Paris, France</h2>
    <h3>Constructed 1887-
1889</h3>
    ...
    ...
  </div> <!--Closing page div-->
>
</body>
```



Creating styles for a `<div>` block

- In CSS, a unique identifier can be defined and given a set of style attributes
 - These styles can be applied to a `<div>` block

```
#page
{
    max-width: 800px;
    margin: 20px auto;
    padding: 30px;
    background-color:
#bfa475;
}
```

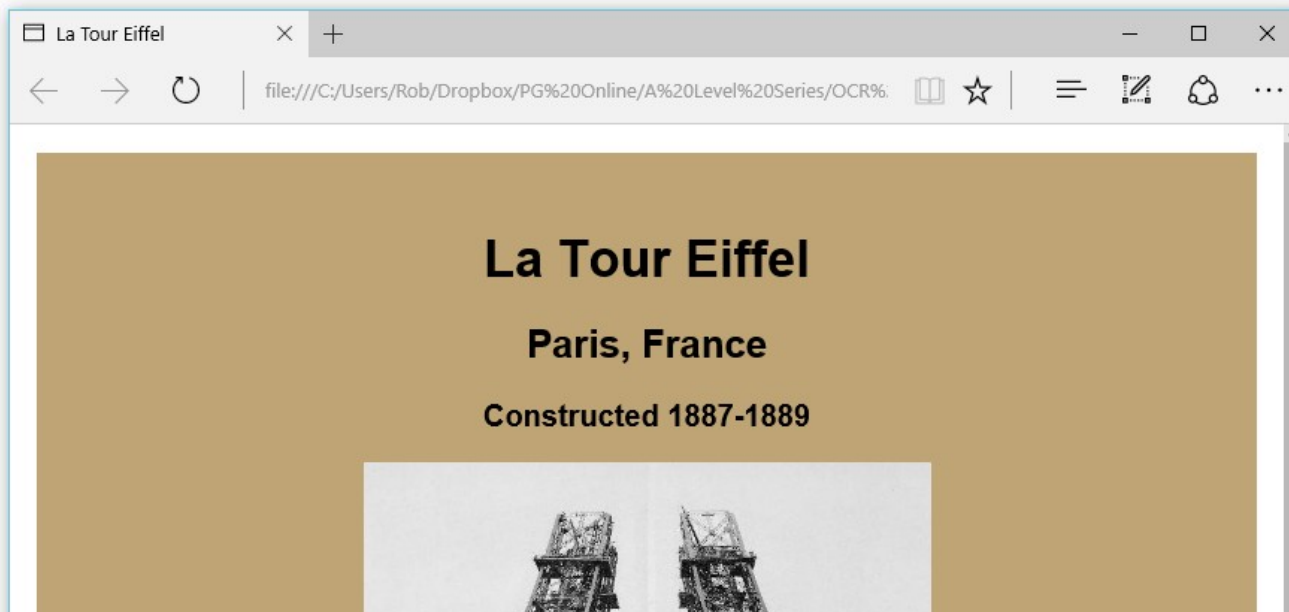


Applying styles to a <div> block

- In the original HTML file, the opening <div> tag can be appended to include the unique CSS identifier

- This will apply the new styles:

`<div id="page">`



Worksheet

- Complete **Activity 4** of the worksheet



Classes and identifiers

- Until now, only `#identifiers` have been used

#identifiers – unique to one element per web page

.classes – can identify more than one element per page

- If multiple `<div>` blocks on a page were to be given the same styles, a class could be set up to apply the styles globally

- For example:

```
color: #333300;
}
```



Floating blocks in columns

- Creating columns can be achieved by floating one block to the right of another
 - Create a new CSS identifier style called `#right-column`
 - Use the attribute `float: (left or right);` to move the block
 - Adjusting the `width` attribute controls the positioning of the floating block

```
#right-column
{
    float: right;
    width: 350px;
    text-align: left;
}
```



Using inline CSS

- Create a new <div> section for the left-column in the HTML file
 - Instead of defining a CSS style in the external file, inline CSS can be used within the HTML file



```
<div id="left-column"  
    style="float:left;
```

```
    text-align:center; width:400px;">
```

```
<div id="left-column" style="float:left; text-  
align:center; ...
```

```
    
```

```
        <a href="https://www.youtube.com/watch?  
v=r65KAj2sB0U"> ...
```

```
    </p>
```

```
</div> <!--Closing left-column div-->
```



Applying styles to a common selector within one block only

- You can override a new style to a common selector such as `<h2>` within a particular `<div>`
- The following CSS script would apply a change in font size and weight to `h2` styles within the `#right-column` div only:

```
#right-column h2
{
    font-size:
1.2rem;
    font-weight:
bold;
}
```



Clearing floats

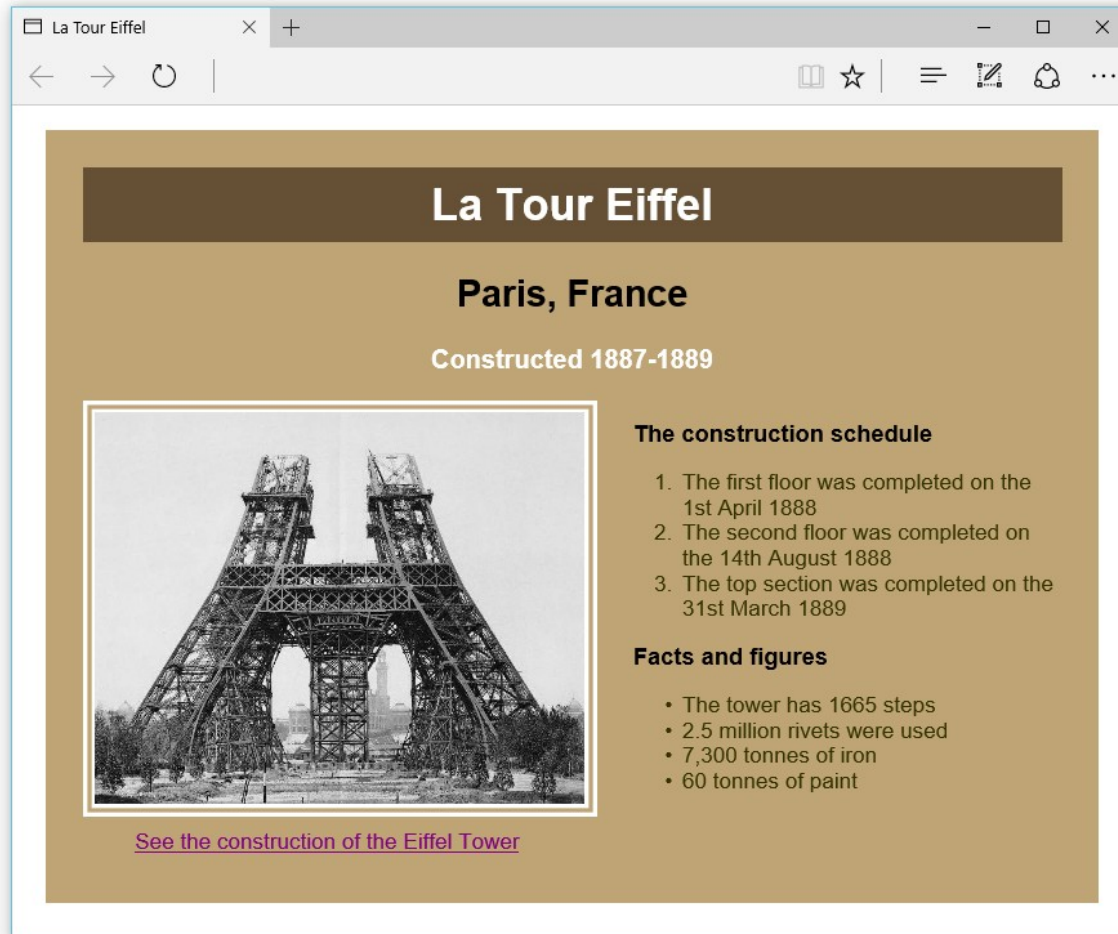
- Floated objects often do not add to the height of the divider they reside in properly
- The page formatting may not otherwise appear to fill in the entire content area
 - Place the following code after the two floated <div> sections:

```
<div style="clear:both;"></div>
```

- Save and refresh the browser

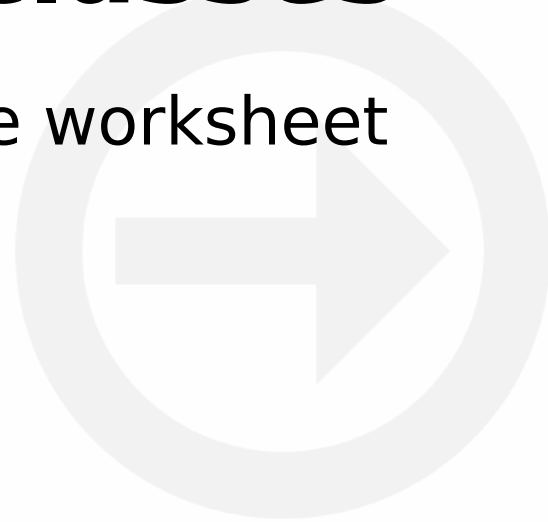


Et voilà!



Identifiers and classes

- Complete **Activity 5** of the worksheet



Plenary

- HTML defines the content of web pages and uses tags to accomplish this
- CSS defines the style and layout of web pages
- We can apply entire CSS styles to single pages or entire websites very easily
 - Applying the two scripts to a web page can result in a pleasant web browsing experience for the user



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